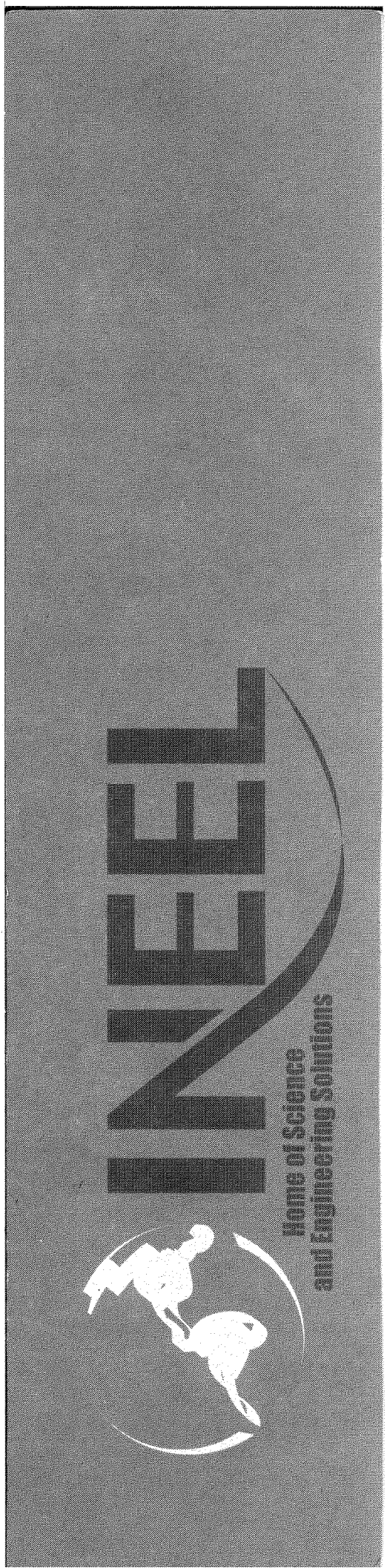

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Revision 0

Project No. 23339

Decontamination and Dismantlement Plan for the Groundwater Treatment Facility

September 2003

Idaho National Engineering and Environmental Laboratory
Bechtel BWXT Idaho, LLC

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Revision 0

Decontamination and Dismantlement Plan for the Groundwater Treatment Facility

September 2003

Idaho National Engineering and Environmental Laboratory
Idaho Completion Project
Idaho Falls, Idaho 83415

Prepared for the
U.S. Department of Energy
Assistant Secretary for Environmental Management
Under DOE Idaho Operations Office
Contract DE-AC07-99ID13727

Decontamination and Dismantlement Plan for the Groundwater Treatment Facility

INEEL/EXT-03-00286
Revision 0

September 2003

Approved by

Lee O. Nelson — 9/25/03
OU 1-07B Project Manager — Date

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Surveillance, Monitoring, and Long-Term Operations Project Engineer — Date

ABSTRACT

This plan specifies the requirements and identifies the tasks that will be performed to decontaminate and dismantle the Groundwater Treatment Facility located at Test Area North, Idaho National Engineering and Environmental Laboratory. Project objectives will be accomplished by removing all hazardous materials and radioactive contamination from the Groundwater Treatment Facility. Contaminated material will be disposed of at the Idaho National Engineering and Environmental Laboratory Comprehensive Environmental Response, Compensation, and Liability Act Disposal Facility (ICDF). Work includes removing the water treatment system and the sprung structure enclosing the facility.

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ACRONYMS

CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
COC	contaminant of concern
CS	carbon steel
D&D	decontamination and dismantlement
DOE	U.S. Department of Energy
DOE-ID	U.S. Department of Energy Idaho Operations Office
GWTF	Groundwater Treatment Facility
HASP	health and safety plan
ICDF	INEEL CERCLA Disposal Facility
INEEL	Idaho National Engineering and Environmental Laboratory
LLW	low-level waste
MCP	management control procedure
OU	operable unit
RCRA	Resource Conservation and Recovery Act
TAN	Test Area North
TSF	Technical Support Facility
VOC	volatile organic compound
WGS	Waste Generator Services

Decontamination and Dismantlement Plan for the Groundwater Treatment Facility

1. INTRODUCTION

Operable Unit (OU) 1-07B is the final remedial action for the TSF-05 Injection Well and surrounding groundwater contamination (TSF-23) located at the Technical Support Facility (TSF) within Test Area North (TAN) at the Idaho National Engineering and Environmental Laboratory (INEEL) shown in Figure 1-1. Part of the interim action for OU 1-07A prior to 1-07B included the construction and operation of the Groundwater Treatment Facility (GWTF). The GWTF extracted and treated contaminated groundwater in the vicinity of TSF-05 and was built to hydraulically contain the hot spot. The system was designed to extract water from well TSF-05 and treat the contaminated groundwater at a rate of 50 gpm (189 L/min). The GWTF uses solids removal, air stripping, carbon adsorption, and ion exchange to treat the extracted groundwater for metals, radionuclides, and volatile organic compounds (VOC). The initial configuration had the treated water pumped to the TSF-07 evaporation pond for disposal. However, shortly after the start of operations, the system was changed so that the treated water was disposed of into a new injection well that is located within the TSF-05 source area (well TAN-31). The GWTF, as well as a field laboratory, are housed in four sea-land containers enclosed in a membrane-covered sprung structure.

Subsequent to the signing of the Record of Decision (ROD) (U.S. Department of Energy Idaho Operations Office [DOE-ID] 1995), field evaluations of alternate technologies were performed. These field evaluations showed that a new technology, in situ bioremediation (ISB), would be a better remedy than the default pump and treat remedy at the hot spot. With the approval of the ROD Amendment (DOE-ID 2001), ISB was selected as the final remedy at the hot spot. Therefore, continued operations of the GWTF are no longer needed. In 2002, the GWTF was flushed, rinsed, drained, and placed in a standby condition in preparation for decontamination and dismantlement (D&D) activities.

This document outlines the work scope and project objectives for the D&D of the GWTF. This plan specifies the requirements and identifies the tasks that will be performed for the D&D of the GWTF treatment system and structures. This project is managed by the OU 1-07B project manager under the BWX Technologies, Inc. (BWXT) Balance of INEEL Clean-up, Surveillance, Monitoring, and Long-Term Operations Project. This document was written according to the requirements outlined in INEEL Management Control Procedure, (MCP) -264, "Deactivation, Decontamination, and Dismantlement Plan."

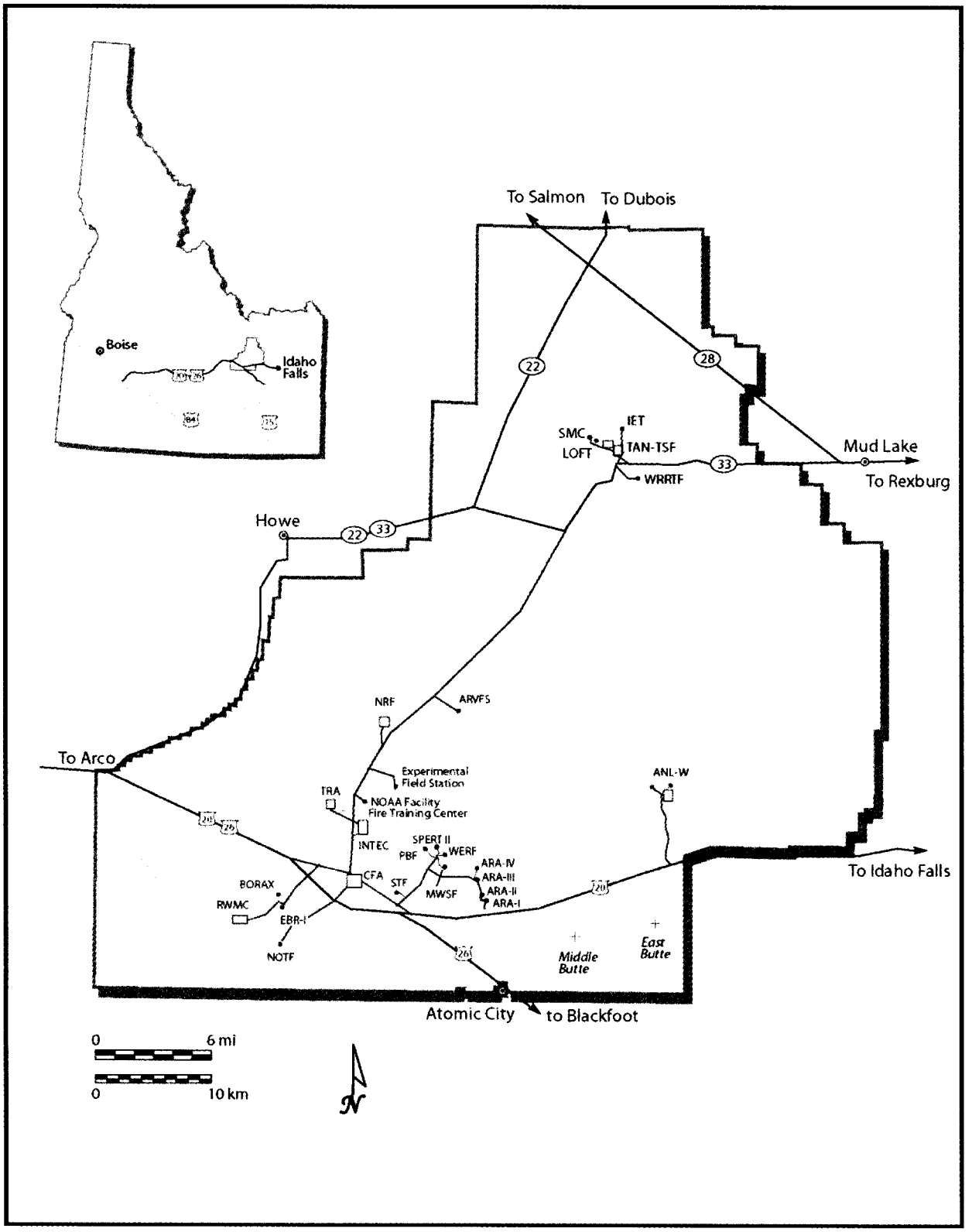

Figure 1-1. Map of the Idaho National Engineering and Environmental Laboratory showing the location of Test Area North and other major facilities.

2. PROJECT OBJECTIVES

The objectives of this GWTF D&D project are to:

- Eliminate potential safety hazards related to the GWTF equipment and components
- Remove the potential for exposure to hazardous and radioactive contaminants to workers and the public
- Package and dispose of all hazardous and radioactive waste currently located within the GWTF
- Remove the GWTF system including all process piping, equipment, tanks, structures, and enclosures.

These objectives will be accomplished by removing, packaging, shipping, and disposing of all hazardous and radioactive materials from the GWTF; dismantling and removing all remaining equipment and components from within the GWTF; and dismantling and removing the sprung structure. The sprung structure will be stored for possible reuse. All work scope and associated tasks will be performed in accordance with Standard (STD) -101, "Integrated Work Control Process."

3. FACILITY DESCRIPTION

3.1 Physical Facilities

The GWTF is located within the Technical Support Facility at TAN in the northern part of INEEL (Figure 1-1). The GWTF is located within the OU 1-07B CERCLA project area as shown in Figure 3-1. The GWTF treatment system is housed within a sprung structure with a gravel floor and includes four sea-land containers (which house the bulk of the system piping and equipment) and three double-wall tanks. Double-wall piping, double-wall tanks, and the sea-land containers provide secondary containment for the entire treatment process. The layout of the GWTF is shown in Figure 3-2.

The GWTF system was designed to treat groundwater extracted from the TSF injection well (TSF-05), which is contaminated with metals, radionuclides, and VOCs, at a flow rate of 50 gpm. A Process Flow diagram is provided in Appendix C. Water was extracted from TSF-05, and well TAN-25, and pumped into surge tank T-1 (double wall, 20,000 gal) through 3-in. influent piping. From there the water is pumped using pump P-2 (70 gpm @ 130 ft., 5hp, 480/3/60) through a cyclone separator, FL-7, and a set of bag filters, FL-3, -4, -5, and -6, which provide initial solids removal to prevent clogging of the downstream multimedia filter. The water is then processed through a scale pretreatment system, EP-1, and an air stripper, ST-1, which provide VOC removal by forcing in a counter-flow direction causing the VOCs to be transferred from the water to the air stream. The effluent air from this process is passed through an air heater and activated carbon beds ACC-1 and -2 (48 × 55-1/4 × 103-5/8-in. epoxy-lined carbon steel [CS]) that remove the VOCs from the air stream.

The treated water accumulates in the air stripper sump and auxiliary sump ST-2. Pump P-3 (50 gpm @ 100 ft., 2 hp, 480/3/60) then pumps the water from the sumps first through a multimedia filter, FL-1 (30 × 60-in. epoxy-lined CS), then through the ion exchange columns IEXP-1 and -2 (30 × 60-in. epoxy-lined CS), and then into the verification tank T-2 (3,000 gal). Water is held in T-2 for quality analyses performed in the process lab. Based on analytical results, pump P-4 (80 gpm @ 162 ft., 5 hp, 480/3/60) is used to either pump the water to well TAN-31 for re-injection into the aquifer, or back to surge tank T-1 for additional processing. A resin hopper, RH-1 (250 gal), is used to slurry the resin into the ion exchange columns. The resin removal and dewatering drum, RRD-1, is used to collect and dewater the used resin. This water is then pumped by P-6 into the cleanup system tank, T-3 (500 gal).

The cleanup system loop is used to backwash and clean out the multimedia filter. This system diverts treated water back through the multimedia filter and processes the backwash water through a bag filter, FL-2, and then into the cleanup system tank, T-3. The backwash water is then returned to T-1 for re-treatment through the GWTF system.

3.2 Radiological and Hazardous Materials Description

The GWTF was flushed and rinsed of tank contents in 2002, and the carbon filter media and bag filters were removed. However, small quantities of residual liquid and sludge still remain in certain areas of the system. In addition, all GWTF equipment and piping that has come in contact with treated water is considered to be listed waste until it has been decontaminated and determined to be clean. The following sections discuss the characterization of the waste treated by the GWTF, as well as the waste that accumulated during operation.

3.2.1 Liquid Waste Characterization

The waste processed through the GWTF included contaminated groundwater and solids pumped out of TSF-05 and TAN-25. The contaminants of concern (COC) at the hot spot are listed in Table 3-1.

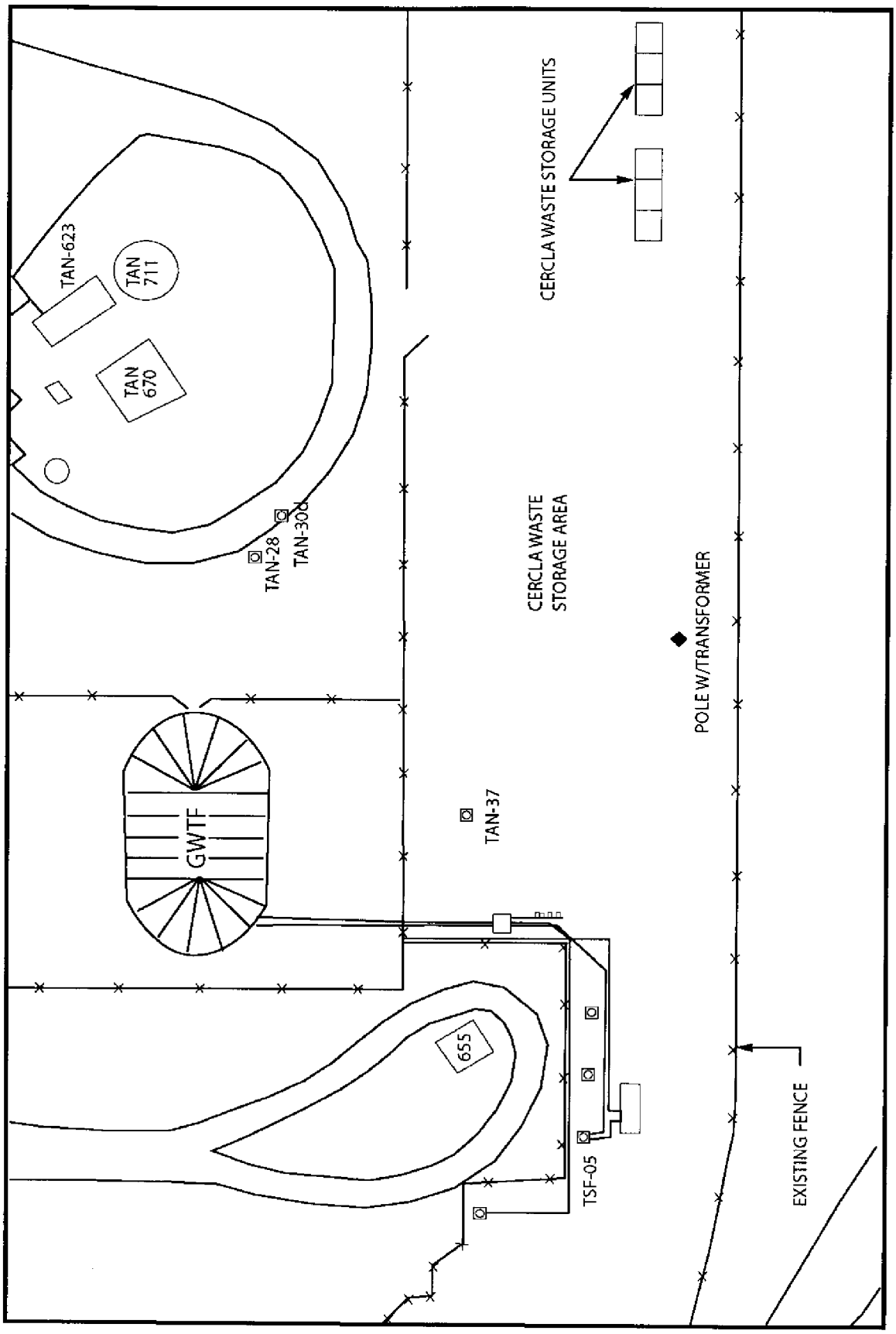

Figure 3-1. Operable Unit 1-07B project area.

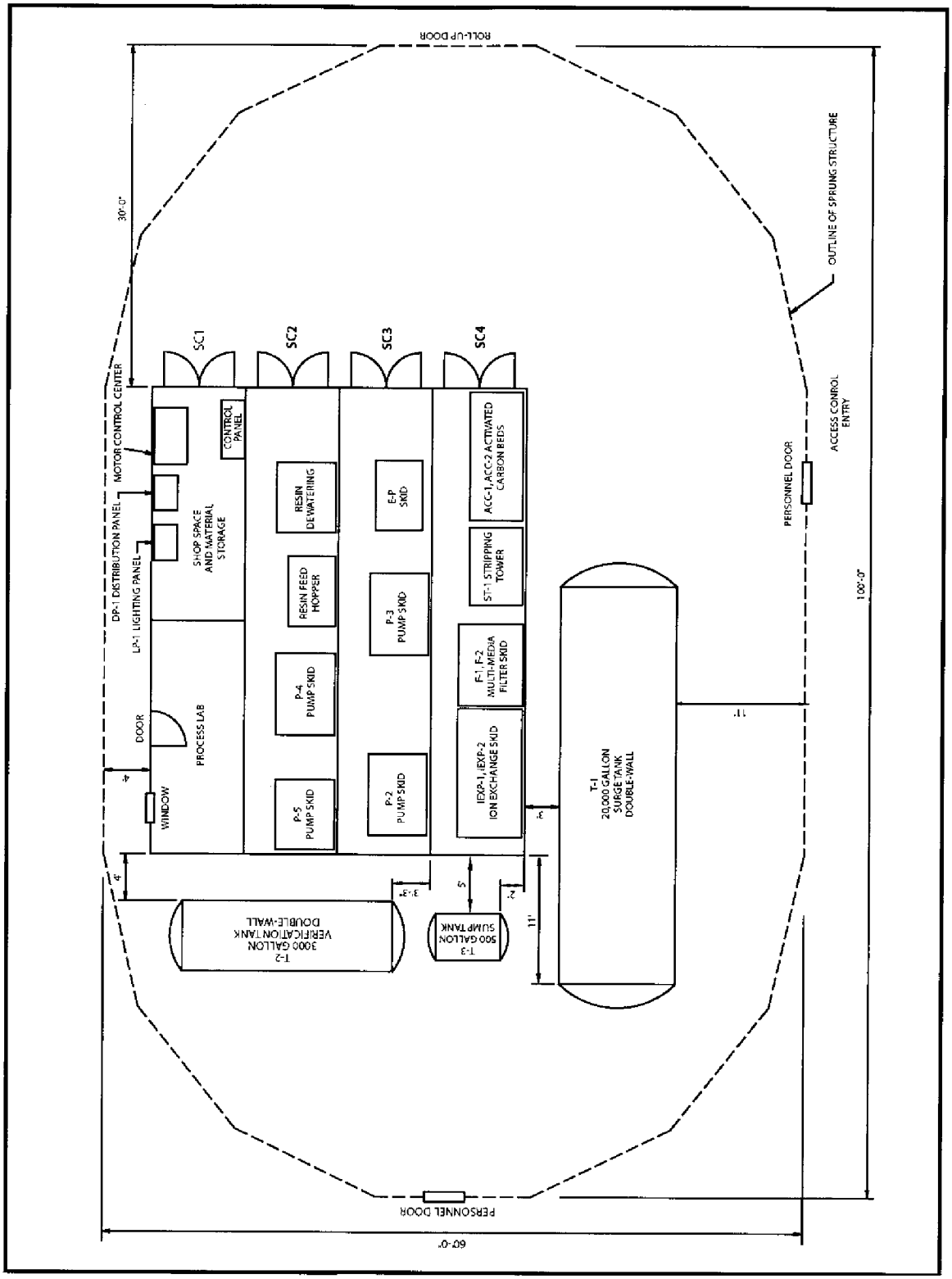

Figure 3-2. Groundwater Treatment Facility layout.

Table 3-1. Contaminants of concern at the hot spot.

Contaminant	Maximum Concentrations[a]	Federal Drinking Water Standard
VOCs		
Trichloroethene (TCE)	12,000–32,000 ppb	5 ppb[b]
Tetrachloroethene (PCE)	110 ppb	5 ppb[b]
cis-1, 2-Dichloroethene (DCE)	3,200–7,500 ppb	70 ppb[b]
Trans-1, 2-Dichloroethene (DCE)	1,300–3,900 ppb	100 ppb[b]
RADIONUCLIDES		
Tritium	14,900–15,300 pCi/L[c]	20,000 pCi/L[c]
Cobalt-60	Not available	100 pCi/L
Strontium-90	530–1,880 pCi/L	8 pCi/L
Cesium-137	1,600–2,150 pCi/L	119 pCi/L[d]
Uranium-234	5.2–7.7 pCi/L[c]	30 pCi/L[c,e]

Key: ppb = parts per billion; pCi/L = Pico curies per liter.

a. The concentration range is taken from measured concentrations at the TSF-05 Injection Well. Source: *Fiscal year 1999 Groundwater Monitoring Report, Test Area North, Operable Unit 1-07B (INEEL 2000).*

b. Parts per billion (ppb) is a weight-to-weight ratio that is equivalent to micrograms per liter (μg/L) in water.

c. Maximum concentrations of tritium and U-234 are below federal drinking water standards, and baseline risk calculations indicate cancer risk of 3×10^{-6}. While this risk is smaller than the 1×10^{-4}, both tritium and U-234 are included as COCs as a comprehensive plume management strategy.

d. The maximum contaminant level for Cs-137 is derived from a limit of 4 mrem per year cumulative dose-equivalent to the public; assuming a lifetime intake of 2 L per day of water.

e. The federal drinking water standard for U-234 is for the U-234, -235, and -238 series.

3.2.2 Solid Waste Characterization

Although the GWTF system has been flushed and rinsed, some liquids and sludge remain in small quantities. The most likely areas for remaining waste accumulation are sludge layers in the air stripper sump (ST-1), auxiliary sump (ST-2) and multimedia filter (FL-1). The sludge contained in the sumps will be similar to the waste encountered in the multimedia filter (FL-1), which extracted the solids from the water downstream from the air stripper. The sampling data taken from the "Closure Report for Sampling Multimedia of the Test Area North Groundwater Treatment Facility,"[a] Is shown in Table 3-2. No VOC data were available.

All other components, including pumps, piping, and tanks within the system, have been flushed, rinsed, and drained. This process removed all VOC contaminated water and therefore the only contaminants that remain in these components are the radionuclides that have become attached to the component materials. All waste generated during the D&D activities fall within the identified waste streams described in the OU 1-07B Waste Management Plan (INEEL 2002a).

a. Davis, L. P., to J. D. Harris, L. P. Izzo, and A. J. Cram, INEEL, December 16, 2002, "Closure Report for Sampling Multimedia at the Test Area North Groundwater Treatment Facility."

Table 3-2. Solids sampling data.

Contaminant	Maximum Concentrations	Federal Drinking Water Standard
RADIONUCLIDES		
Tritium	Non-detect[a]	20,000 pCi/L[b]
Cobalt-60	2.07 pCi/g[a]	100 pCi/L
Strontium-90	118 pCi/g[a]	8 pCi/L
Cesium-137	407 pCi/g[a]	119 pCi/L[c]
Uranium-234	1.30 pCi/g[a]	30 pCi/L[b,d]

Key: ppb = parts per billion; pCi/L = Pico curies per liter.

a. The maximum concentrations for radionuclides are taken from measured concentrations of the multimedia filter, sample numbers W0310401R4 and W0310402R4. Source: "Closure Report for Sampling Multimedia the Test Area North Groundwater Treatment Facility November 11, 2002" (see footnote a).

b. Maximum concentrations of tritium and U-234 are below federal drinking water standards, and baseline risk calculations indicate cancer risk of 3×10^{-6}. While this risk is smaller than the 1×10^{-4}, both tritium and U-234 are included as COCs as a comprehensive plume management strategy.

c. The maximum contaminant level for Cs-137 is derived from a limit of 4 mrem per year cumulative dose-equivalent to the public; assuming a lifetime intake of 2 L per day of water.

d. The federal drinking water standard for U-234 is for the U-234, -235, and -238 series.

4. MANAGEMENT PLANNING AND CONTROL APPROACH

4.1 Project Management Organization

The organizational structure (Figure 4-1) for this task reflects the resources and expertise required to perform the task while minimizing risks to worker health and safety. The project organization and description of responsibilities of the field team members is contained in the OU 1-07B Health and Safety Plan (HASP) (INEEL 2002b).

4.2 Administrative Controls

This plan outlines the general work scope and project objectives and serves as the primary project management plan for the GWTF D&D activities. All activities associated with the GWTF D&D must conform to the requirements of this plan, the HASP, Plan (PLN) -1053, "Deactivation, Decontamination, and Decommissioning Project Manager's Handbook," and MCP-2730, "Demolition." Project or task-specific work orders, when necessary, will be written in accordance with STD-101, "Integrated Work Control Process," which specifies the requirements of each work activity. In addition, where necessary, safe work permits (SWPs), radiation work permits (RWPs), job safety analyses (JSAs), or other documentation may be written to comply with INEEL procedures and the requirements of this plan. Any work performed by a subcontractor will also be subject to INEEL requirements.

Work orders will be used to define the tasks to be accomplished; required completion date and reviews; job steps and required actions to mitigate potential hazards; and access control interface requirements. The work order is a written agreement between project management and the performing organization specifying the tasks to be performed and identifying the associated hazard mitigations and controls that will be needed. No activities beyond those described in the work order will be authorized, except as specified on an approved field change sheet.

The OU 1-07B construction coordinator (as the field team leader [FTL]), or designee, must report work progress in the TAN daily plan-of-the-day meetings. These meetings integrate all work tasks conducted at the TAN facility. No work tasks will commence without being listed on the plan-of-the-day schedule.

The OU 1-07B project manager (PM) and/or project engineer (PE) will conduct routine meetings to check the project's progress against current work plans and compare the costs against the schedule and budget. Such reviews will allow management to make the necessary work and funding decisions required to successfully accomplish project activities.

When the project is complete, a final D&D report will be prepared that describes the completed activities, waste sampling required for characterization, a summary of waste quantities and disposition locations, and verification sampling. Key facility drawings will be updated as needed to reflect the final facility configuration prior to final project closeout. Any drawing modification will be prepared in accordance with MCP-2377, "Development, Assessment, and Maintenance of Drawings."

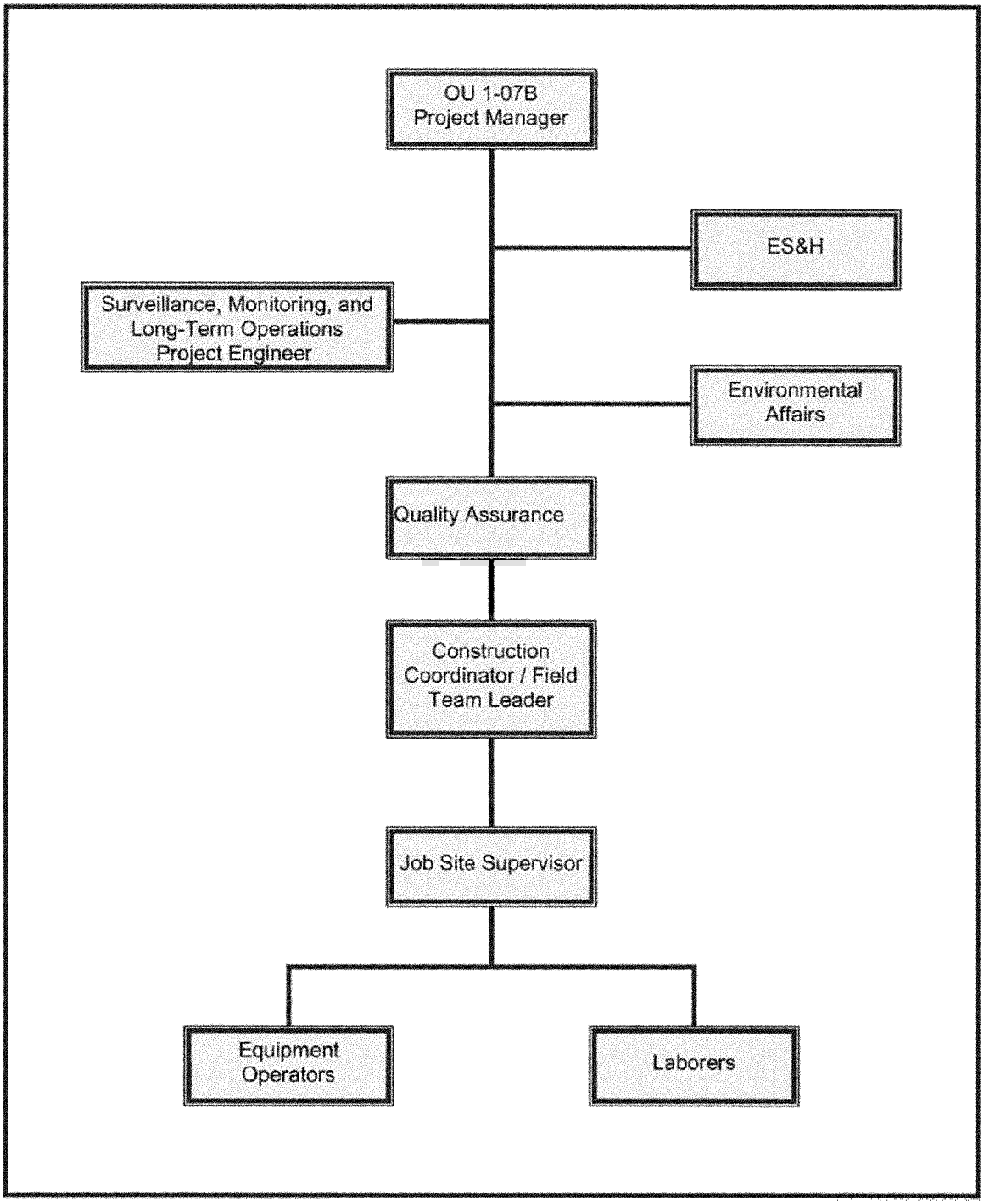

Figure 4-1. Organizational structure.

5. TECHNICAL PLAN

Decontamination and dismantlement operations at the GWTF consist of decontamination tasks and the removal of the treatment system and exterior structure. The following sections discuss the technical plan for the D&D of GWTF.

5.1 Total Work Scope

5.1.1 Stage I—Prepare the Facility for Decontamination and Dismantlement

The following general tasks will be performed to prepare the project site for D&D activities:

- Mobilize tools and equipment
- Set up the work zones and site access controls
- Set up safety and emergency response equipment, including fire protection equipment, spill cleanup kits, first-aid kits, etc.

Waste stream identification and handling will be determined and coordinated prior to the start of work. Sampling will be conducted as required to meet the ICDF Waste Acceptance Criteria, if needed. Sampling will be performed in accordance with MCP-3562, "Hazard Identification Analysis and Control of Operational Activities," and a separate approved sampling plan.

5.1.2 Stage II—Perform Electrical Isolation and Removal Actions

During this stage of the project, verification that electrical utilities have been isolated and disconnected from equipment to be removed from the GWTF structure will be performed. The main electrical power connection will be disconnected from the distribution power panels (PP-01 and LP-01) prior to the start of these D&D activities. The following activities will be performed during this phase of the project.

- Verify that electrical utilities have been disconnected
- Disconnect electrical and utility lines that connect internal GWTF components
- Remove and dispose electrical boxes and wiring from within the facility and control room.

Work will comply with lockout/tagout requirements per INEEL MCP-3650, "Chapter IX Level I Lockouts and Tagouts," or MCP-3651, "Chapter IX Level II Lockouts and Tagouts." Where applicable, out-of-service tags will also be used at the GWTF. Out-of-service tags may be used to prohibit operation of equipment. Out-of-service tags may be posted at major system isolation points. The OU1-07B field engineer will keep a logbook for each tag placed in the facility. Out-of-service tags will comply with the requirements of MCP-2978, "Chapter VIII-Control of Equipment and System Status."

5.1.3 Stage III—Remove and Dispose of Hazardous/Radioactive Materials

This stage of the project includes the removal and disposal of hazardous and radioactive materials from the facility. Some residuals and sludge still remain in several system components. The following system components will be disassembled, thoroughly cleaned, and placed into waste containers:

- Air stripper sump (ST-1)
- Auxiliary sump (ST-2)
- Multimedia filter (FL-1)
- Cleanup system tank (T-3)

The components will be cut to size and packaged according to applicable shipment and disposal requirements. Waste may be disposed of as mixed waste or radiologically contaminated low-level waste (LLW).

Before generating any waste for this project, INEEL Waste Determination and Disposition Forms (Form 435.39) will be prepared and completed. The waste determination forms will be reviewed by Packaging and Transportation, Environmental Affairs, and Waste Generator Services (WGS) to ensure compliance with waste characterization, storage, packaging, transport, and disposal requirements.

Waste generated during this project will be managed in accordance with applicable INEEL procedures and requirements. These include MCP-3472, "Identification and Characterization of Environmentally Regulated Waste"; MCP-62, "Waste Generator Services—LLW Management"; MCP-69, "Waste Generator Services—Hazardous Waste Management"; and MCP-70, "Waste Generator Services—Mixed LLW Management."

Before releasing any material from the task site, each piece of equipment will be surveyed by radiological control personnel and verified to have radiological contamination levels below release limits per MCP-425, "Surveys of Materials for Unrestricted Release and Control of Movement of Contaminated Material." All equipment determined to meet release limits (i.e., radiologically clean and determined to be nonhazardous) will be disposed of at the Central Facilities Area (CFA) landfill, excessed, or recycled by transporting the items to the CFA excess yard. The radiological control technician will log survey results in the project logbook for each item surveyed. The applicable requirements of MCP-2477, "Utilization and Disposal of Real Property," and MCP-454, "INEEL Recycling Procedure," may apply when releasing materials for excess, reuse, or recycling.

Packaging and transportation of hazardous materials will be performed in accordance with INEEL MCP-2669, "Hazardous Material Shipping." The integrated planning sheets will identify the packaging and transportation requirements.

NOTE: Procedures are continually being revised and updated. The project will use the most up-to-date revision of the procedure available.

5.1.4 Stage IV—Removal of the System Components

The GWTF system was flushed and rinsed in 2002 and is currently in a shutdown mode. The individual system components will be cleaned and decontaminated as they are removed.

The following items will be removed from the GWTF system; interior mechanical, electrical, lighting, fire protection, process pipes, tanks, sumps, heating and ventilation systems, and other associated equipment contained within the sea-land containers. All system components that have been previously rinsed and contain no residuals will be considered clean of hazardous material and will be removed. Components that still contain residual material will be emptied, rinsed again, and then rinsate sampling will be performed to verify they are clean. The radiological screening will be performed using hand-held radiation monitors. System piping will be cut up and reduced in size before being placed into waste boxes.

The GWTF laboratory will also be removed. All hazardous waste and chemicals have previously been removed from the laboratory. There are no radionuclide materials or areas within the laboratory.

Before removing any utility lines, systems, or equipment, workers will verify logbook entries and that lockout-tagout procedures are conducted in accordance with appropriate MCPs as described in Section 5.1.2.

5.1.5 Stage V—Removal of Sea-Land Containers, Large Tanks, and Sprung Structure

Once the system equipment has been removed, the sprung structure enclosing the facility will be dismantled and stored for excess or possible reuse at the INEEL. The four sea-land containers will then be decontaminated, if necessary, and removed from the facility. Smear sampling and hand-held radiation monitors will be used to verify that the containers are radiologically clean. Following verification, the containers will be set aside for future use.

Removal of the sea-land containers will provide adequate room for cutting up the two large tanks (T-1 and T-2). The tanks will be reduced in size before being shipped for disposal.

5.1.6 Stage VI—Perform Post-Decontamination and Dismantlement Activities

This stage of the project includes performing post-D&D characterization of the facility, and preparing the final D&D documentation. Characterization activities will include radiological surveys of the area and any remaining equipment, and may include sampling if areas of concern are identified during final inspection.

Data collected to document that the area is clean will be recorded in a final report. The report will contain characterization data, a description of the final facility status, and photos of the project.

5.2 Release Criteria

Materials to be released will comply with the *INEEL Radiological Control Manual.* Upon completion of the project, the work area will be surveyed and verified to have radiological contamination levels below the release limits per MCP-425, "Surveys of Materials for Unrestricted Release and Control of Movement of Contaminated Materials," and MCP-268, "Release Criteria for INEEL and D&D Projects." All waste will be considered and controlled as CERCLA generated waste.

5.3 Emergency Preparedness

This section contains a brief outline of the emergency response, contingency planning, and spill prevention plans at the GWTF project site. Section 10 of the project HASP describes detailed emergency preparedness and personnel responsibilities in the event of an emergency. The *Idaho National Engineering and Environmental Laboratory Emergency Plan/RCRA Contingency Plan* (PLN-114)

contains specific emergency response plans. Addendum 5 of the INEEL plan contains specific information regarding emergency response at TAN.

5.3.1 Facility Emergency Procedures

In the event of a local area evacuation of GWTF, personnel will meet at the designated assembly area, or as directed by the TAN shift supervisor or field team leader. The order to evacuate may be given by word of mouth, radio, or voice paging system.

If a take-cover condition occurs, personnel will assemble inside the GWTF building or the nearest available building. Personnel will be alerted to take cover by a steady siren heard throughout the TAN facility. The take cover order may also be given by word of mouth, radio, or voice paging system.

The signal to be used to alert project personnel of a TAN facility evacuation condition will be an alternating siren heard throughout the TAN facility. In the event of a total facility evacuation, task site personnel will evacuate and assemble at the appropriate location outside the TAN facility fence.

Various radiological monitoring alarms are also located in the TAN area. These alarms are designed to alert personnel that radiation above the alarm setting has been detected in the immediate area of the alarm and a potential radiation hazard exists.

5.3.2 Decontamination and Dismantlement Site Specific Emergency

In the event of an emergency at the task site, project personnel will summon emergency assistance by calling the INEEL alarm center at 777 or the Warning Communications Center (WCC) at 526-1515. If a hazardous material spill occurs, spill notification is required by dialing 526-4444 and entering pager #6400. The TAN incident response team may be summoned for help by contacting the TAN shift supervisor at 526-9504.

The following emergency response equipment will be maintained at the task site:

- Fire extinguishers—various extinguishers are placed in GWTF and will be inspected monthly
- First aid kit
- Communication equipment (telephone, cellular phone, or portable two-way radio)
- Hazardous material spill kit
- Portable eyewash station.

The INEEL Fire Department (phone numbers 526-6261 and 526-6262), located at building TAN-687, is the closest fire response facility. The fire department also maintains a hazardous materials response van equipped to respond to emergencies involving the accidental release of hazardous materials.

5.4 Waste Management

All waste disposal activities will be handled in accordance with the OU 1-07B Waste Management Plan (INEEL 2002a) and coordinated with WGS. Waste determination and disposition forms (INEEL Form 435.39) will be completed and approved before any waste generation or disposal.

Radiological contamination is present in some areas of the GWTF. Any equipment, components, and material removed from the contaminated area will be carefully surveyed for radioactivity. Any waste that is only radioactively contaminated will be disposed of as CERCLA waste per the OU 1-07B Waste Management Plan (INEEL 2002a). Waste that is found to be hazardous or mixed will be sampled and evaluated to determine that it meets Land Disposal Restrictions (LDR) and ICDF Waste Acceptance Criteria (WAC) and can be sent to the ICDF for disposal. Sampling of this waste will be done using an approved Field Sampling Plan (FSP).

Packaging and shipping of radioactive, hazardous and/or mixed waste will be performed in accordance with the *Idaho National Engineering and Environmental Laboratory Waste Acceptance Criteria* (DOE-ID 2003) and the *ICDF Complex Waste Acceptance Criteria* (INEEL 2003). Required documentation for shipping waste will be prepared and appropriate approvals obtained when the waste is generated.

5.5 Pollution Prevention/Waste Minimization

Waste minimization will be performed in accordance with INEEL requirements and procedures, including MCP-3480, "Environmental Instructions for Facilities, Processes, Materials and Equipment," with an approved Environmental Checklist. In general, waste minimization will be achieved by performing all operations in the sequence specified in approved work documentation. Removing contamination first will minimize the amount of uncontaminated equipment and material that would otherwise become contaminated during operations. Material will be recycled and excessed to the maximum extent possible.

6. COST AND SCHEDULE

The estimated cost of D&D operations is $640,861. This estimate covers the work specified in Section 5 and is the basis for the cost estimate summary contained in Appendix A.

The startup of D&D operations is expected to begin in the spring of 2004. Completion of the D&D project is estimated to take approximately 4 months. Appendix B includes a summary of the proposed schedule.

7. WASTE VOLUME ESTIMATES

The estimated volumes of radioactively contaminated and clean waste to be generated for this project are presented below. The waste volume estimates are based on current knowledge of the GWTF facility and its contents. Some materials may need further sampling and characterization as they are generated for waste disposal. Any additional sampling will be coordinated with WGS.

Tables 7-1, 7-2, and 7-3 list the waste volume estimates based on the work specified in Section 5. Each volume is an estimate based on dimensions of the materials or structures. Some of the items listed in Table 7-2 may be decontaminated and reused. These items are identified in the notes column of the table.

Table 7-1. Clean components.

Component	Number	Size	Notes
Blower	F-1	5 ft^3	2.5 × 2 × 1 ft
Air influent piping	From F-1 to ST-1	20 ft	—
Resin hopper	RH-1	250 gal	5 × 4 ft D
Sprung structure	—	—	—

Table 7-2. F001 listed, hazardous waste components.

Component	Number	Size	Notes
System piping, 1 in. SW	—	100 ft	—
System piping, 1 in. DW	—	30 ft	—
System piping, 1-1/2 in. SW	—	60 ft	—
System piping, 2 in. SW	—	200 ft	—
System piping, 2 in. DW	—	70 ft	—
System piping, 3 in. SW	—	30 ft	—
Air exhaust piping, 6 in.	—	30 ft	—
Activated carbon bed	ACC-1	81 ft^3	76 × 44 × 42 in. Available for Reuse
Activated carbon bed	ACC-2	81 ft^3	76 × 44 × 42 in. Available for Reuse
Air heater	H-1	8.7 ft^3	48 × 20 in. D Available for Reuse
Sea-land containers	C-1, C-2, C-3, C-4	—	40 × 8 × 9 ft; will be cleaned and used for project storage. Available for Reuse

Note:
SW–single-wall piping
DW–double-wall piping

Table 7-3. Mixed waste and radiologically contaminated components.

Component	Number	Size	Notes
Surge tank	T-1	27 ft^3	Double wall, 20,000 gal, 10 ft D × 34 ft
Pump	P-2	3 ft^3	36 ×18 ×6 in. + 32 × 6 in. D
Cyclone separator	FL-7	1 ft^3	50 gpm
Bag filters	FL-3, FL-4, FL-5, FL-6	5 ft^3	—
Scale pretreatment system	EP-1	100 ft^3	Includes ozonator, precipitator, and four (4) cyclone separators
Air stripper	ST-1	65 ft^3	—
Air stripper sludge	—	1 ft^3	1 in. deep
Auxiliary sump	ST-2	35 ft^3	150 gal
Ion exchange column	IEXP-1	35 ft^3	36 in. D × 60 in.
Ion exchange column	IEXP-2	35 ft^3	36 in. D × 60 in.
Verification tank	T-2	510 ft^3	3,000 gal, 18 × 6 ft D
Verification pump	P-4	3 ft^3	18 ×6 × 30 in. + 62 × 6 in. D
Auxiliary sump sludge	—	1.5 ft^3	1 in. deep
Pump	P-3	5 ft^3	Air stripper distribution pump
Multimedia filter	FL-1	40 ft^3	30 × 60 in.
Pump	P-6	7 ft^3	Resin removal and dewatering pump
Backwash bag filter	FL-2	1.5 ft^3	—
Cleanup system tank	T-3	80 ft^3	500 gal
Pump	P-5	3 ft^3	Cleanup system pump

8. QUALITY ASSURANCE PROGRAM

The purpose of the Quality Assurance (QA) program is to ensure that the project activities at GWTF are planned and performed in accordance with specifications and requirements contained in this plan. The QA program for this project is controlled by the guidelines outlined in the *Environmental Restoration Project Management Plan* (PLN-694) and the *Quality Assurance Project Plan for Waste Area Groups 1, 2, 3, 4, 5, 6, 7, 10 and Inactive Sites (DOE-ID 2002)*.

9. REPORTING REQUIREMENTS

The following sections briefly describe the reports that will be generated due to the GWTF D&D activities.

9.1 Status Reports

Status reports will be provided to the OU 1-07B project manager on a weekly basis during the D&D activities. These reports will describe work performed, planned work, and a summary of waste generated.

9.2 Final Report

A final report will be prepared after the completion of the GWTF D&D Project. The report will describe the steps taken to complete the project, the results of sampling performed, disposition of materials and waste, and the results of a site inspection and evaluation to determine that the GWTF has been completely removed and the area has no remaining CERCLA waste, equipment, or components.

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Appendix A

Groundwater Treatment Facility Cost Estimates

Appendix A

Groundwater Treatment Facility Cost Estimates

Table A-1 summarizes the estimated costs to complete the D&D of GWTF. This summary is based on a detailed cost estimate package containing the cost estimates for individual activities. This cost estimate is based on available information from nationally recognized databases, cost curves, vendor information, unit cost guides, historical costs, and contractor experience with similar projects. This estimate covers the work specified in Section 5 of the GWTF D&D plan.

Table A-1. Cost estimate.

Activity	Estimated Cost
Project planning and documentation	128,700
Prepare the facility for D&D	14,077
Perform electrical isolation and removal actions	24,359
Remove and dispose of hazardous/radioactive waste	23,705
Removal of system components and sea-land containers	131,093
Removal of large tanks and sprung structures	108,521
Perform post D&D activities	40,306
Sampling and analysis/characterization	22,600
Project management	147,500
Total Estimated Cost:	640,861

Appendix B

Groundwater Treatment Facility Decontamination and Dismantlement Schedule

Appendix B

Groundwater Treatment Facility Decontamination and Dismantlement Schedule

Figure B-1 depicts the schedule of activities to be performed for the GWTF D&D.

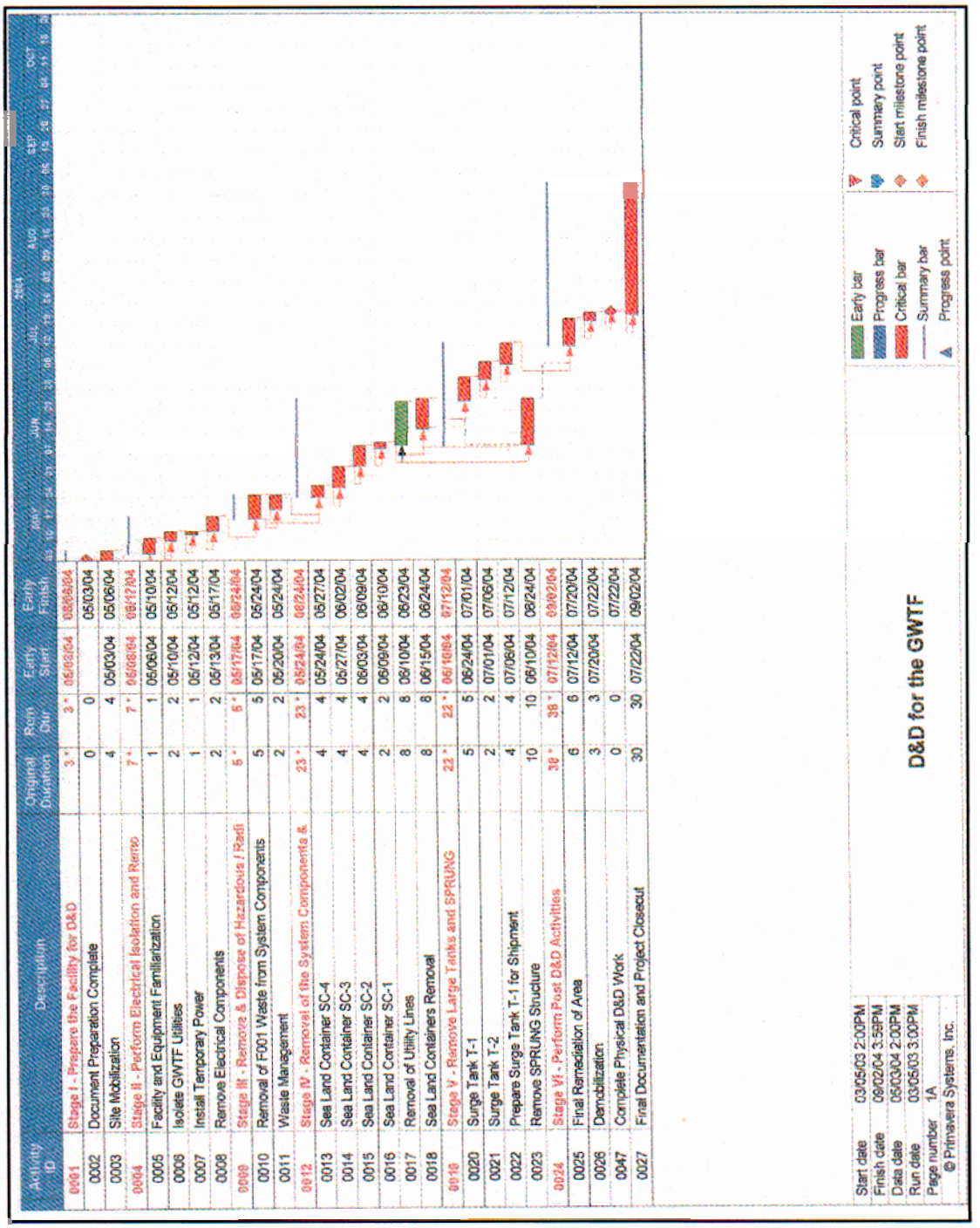

Figure B-1. Schedule.

Appendix C

Groundwater Treatment Facility Process Flow

Appendix C

Groundwater Treatment Facility Process Flow

Figure C-1 depicts the process flow of the Groundwater Treatment Facility.

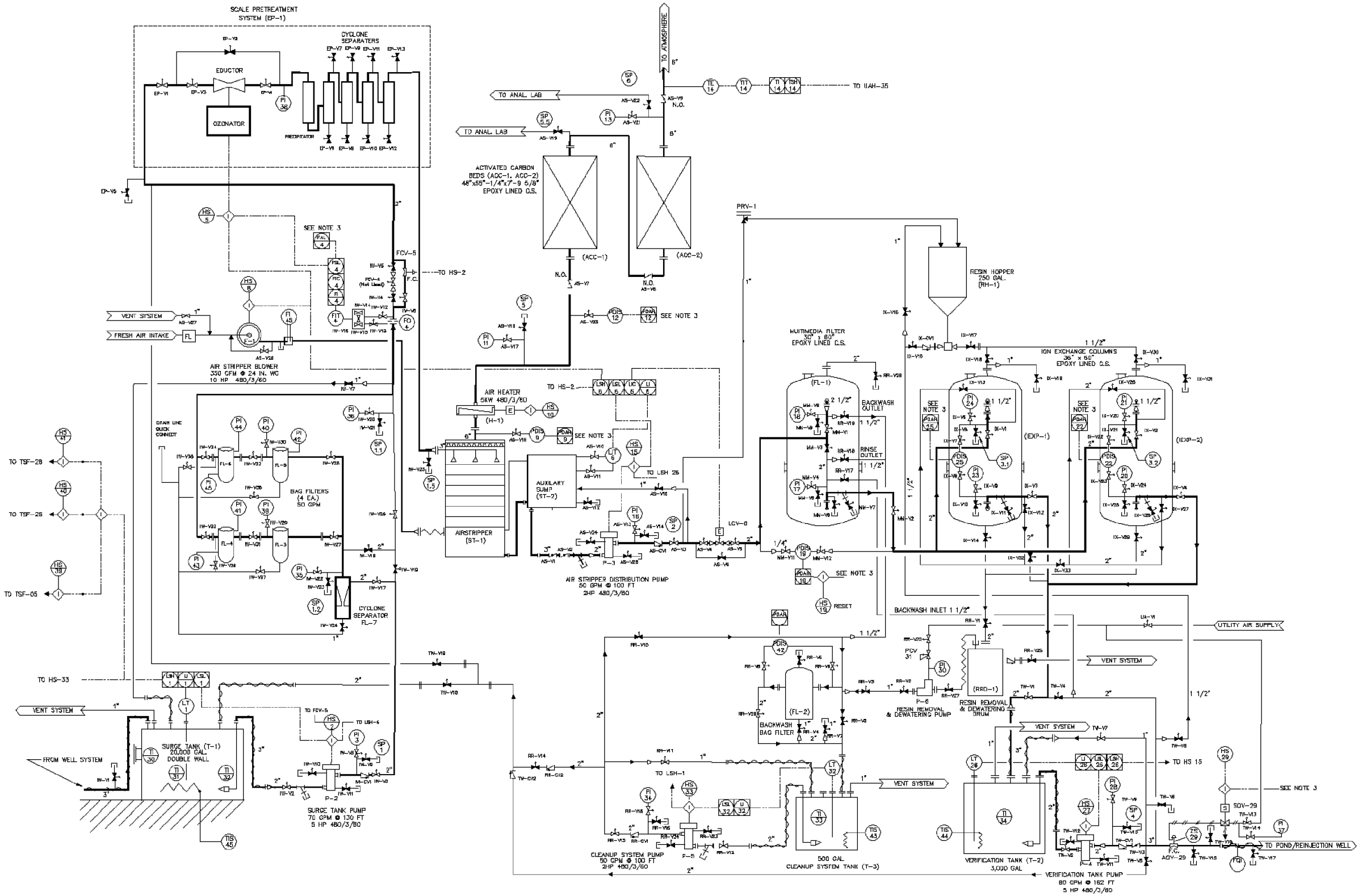

Figure C-1. Process flow.